

ABSTRACT

A system for three-dimensional tomosynthesis imaging of a target element is provided having an image acquisition element and a processor. The image acquisition element obtains a plurality of images of the target element from a plurality of angles and includes a radiation
5 source that is positionable at a plurality of angles with respect to the target element and a radiation detector. The radiation detector is positioned so as to detect radiation emitted by the radiation source passing through the target element and determine a plurality of attenuation values for radiation passing through the target element to establish a radiation absorbance
10 projection image of the target element for a particular radiation source angle. The processor is configured to apply an iterative reconstruction algorithm to the radiation absorbance projection images of the target element obtained from a plurality of radiation source angles to generate a three-dimensional reconstruction of the target element. The system can gain further accuracy where the iterative reconstruction algorithm is applied using cone-beam forward projection and
back projection.

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